

## ABSTRACT

Polymer materials are described that undergo a two-level three-dimensional crosslinking process. During this process, hydrophilic polymers are crosslinked at two levels, the first results in a low level of crosslinking which leads to a toughening of the layer preventing dissolution by the fountain solution but with the layer remaining hydrophilic. The second level of crosslinking is higher and is the result of exposure to a laser diode thermal imaging device. The crosslinking at this second level results in a loss of hydrophilicity and provides instead an oleophilic image capable of accepting and transferring oil-based ink. The polymer materials are particularly useful in lithographic printing systems where they may be used in articles such as a printing plate comprising a substrate having coated thereon a layer that becomes less hydrophilic upon exposure to thermal energy (e.g., heat applied by a laser, other collimated light, or thermal printhead) that effects crosslinking (initial crosslinking or increased crosslinking) in the layer, the layer comprising a mixture of a crosslinked polymer and a thermally active crosslinking metal compound. The invention also provides an overcoat layer elutable in aqueous media for a printing plate precursor comprising on a substrate a layer comprising a mixture of a crosslinked polymer and a thermally active crosslinking metal compound. The overcoat layer protects the heat-sensitive crosslinked polymer layer from discoloration, contamination and scratching and reduces odor and particulate emissions.